Hitting the jackpot and the health agenda: the case of processed potato products

Revoredo-Giha, C

Published in:
Procedia Economics and Finance

DOI:
10.1016/S2212-5671(14)00744-8

First published: 01/07/2014

Document Version
Publisher's PDF, also known as Version of record

Available online at www.sciencedirect.com

ScienceDirect

Procedia Economics and Finance 14 (2014) 525 – 533

Procedia Economics and Finance

www.elsevier.com/locate/procedia

International Conference on Applied Economics (ICOAE) 2014

Hitting the jackpot and the health agenda: the case of processed potato products

Cesar Revoredo-Giha[a]*

[a]*Food Marketing Research Team, Scotland's Rural College (SRUC), King's Buildings, West Mains Road, Edinburgh EH9 3JG, UK*

Abstract

One of the models in the industrial organisation literature considers that firms aim to "hit the jackpot", i.e., to introduce new products that are successfully uptaken by consumers, and therefore, remain on retailers' shelves for a long time. This paper studies the implications of such a type of competition for the health agenda aiming at improving the nutritional quality of the available food products focusing on the processed potato products category. The analysis indicates that one should not expect the assortment of products to change and the most effective public policy would be the enforcement of product reformulation.

Selection and/or peer-review under responsibility of the Organizing Committee of ICOAE 2014

Keywords: Manufacturing firms; health agenda; food

1. Introduction

One of the problems frequently mentioned as regards the UK food system is the increasing link between the quality of consumers' diet and degenerative diseases (Lang et al., 2001). Furthermore, the quality of the diet has also been mentioned as one of the reasons behind the observed pattern of obesity in adults and children, which also has health repercussions (UK GOSF, 2007). Although there are many reasons behind the health problem, the nutritional quality of the diet is a particularly interesting one because in it consumers' choice (demand side) and product availability (supply side) come together.

* Corresponding author. Tel.: +44-131-535-4344; fax: +44-131-535-4345.
E-mail address: cesar.revoredo@sruc.ac.uk.

Selection and/or peer-review under responsibility of the Organizing Committee of ICOAE 2014
doi:10.1016/S2212-5671(14)00744-8

The UK diet has substantively changed during the post-war time influenced by changes in the society e.g., demographics, work force participation, income (Foster and Lunn, 2007). These changes have gone in parallel with the increasing importance of multiple retailers as major food suppliers as well as new food technologies and new ingredients which have allowed manufacturers (through their own brand products) and retailers (through their private label products) to exhibit a wide range of foods and give consumers the opportunity to compare them and select their preferred choice.

The growing social and economic costs of diet-related disease have prompted policymakers to look for methods of changing people's behaviour. According to the Food Ethics Council (2014) the British government believes the key lies in 'personalisation', whereby people take greater responsibility for their own health. However, the success of this policy depends on people's choices as consumers. But consumers can only choose from the options made available to them by retailers and caterers, putting such businesses in a powerful position to shape what we eat. Personalisation can work, and consumers should be able to make a choice about the food they eat. But they should do so within a food system that is ethical, fair and sustainable. To achieve that, retailers will have to decide what products to stock – or 'choice edit' – on the basis of ethics and health. People do not expect to be able to buy unsustainable products or to eat unhealthy foods as day-to-day staples. Choice editing is a way of respecting that.

It should be noted that similar arguments to those aforementioned have been expressed by Professor Tim Lang (see Hickman, 2007). According to him consumers need not be bothered in the supermarket aisle over complex issues regarding food sustainability, often without any meaningful data on the label to inform their decision-making. Instead, he suggested that the manufacturers and retailers should take more responsibility by making most of these decisions on consumer's behalf before the product even reaches the shelves.

Given the above context, the purpose of this paper is to discuss -using the popular frozen potato products category as a case study- to what extent manufacturers and retailers could be willing to edit consumers' choice given the way that they compete in the market for introducing new food products. An industrial organisation model is used to analyse firms competition and to gain insight about the success possibilities of choice editing within firms.

The structure of the paper is as follows: it starts presenting the main features of the processed potato product in Scotland. It is followed by a brief description an industrial organisation model of manufacturing firms to gain understanding about firms' competition and the role of introduction of new products in such a competition. The next section discussed using the model and additional statistics for the frozen potato sector the implication for the health agenda and in particular as regards a choice editing policy. Finally, conclusions are presented.

2. The potato processed products in Scotland

The purpose of this section is to put context into the discussion by considering the case of the processed potato products category. This is an important category, which according to Mintel Keynote report (Mintel, 2014) represented in the UK in 2013 a value of 675 million pounds. Although the dominant product within the category is frozen chips, the category also includes frozen roast potatoes from brands such as Aunt Bessie's, which provides consumers with a more convenient means of producing the Sunday roast, while innovations, such as McCain's new frozen jacket potatoes, also focus on consumer convenience.

Tables 1 to 3 describe the processed potato product sector in Scotland using statistics from the Kantar Worldpanel for the country for the period 2006 to 2011. The panel is representative of the Scottish population and covers approximately 1,500 households followed per week. These households remain in the sample for a maximum of three years. Amongst the attributes available for the data are the suppliers, which can be either

brands (e.g., manufacturing firms such as McCain or Heinz) or retailers private labels (e.g., Tesco's or Asda's).

Table 1 presents the market structure statistics. The number of firms supplying processed potato products has been fluctuating over time and in 2011 they were 29. Concentration ratios indicate a medium level of concentration and the share of the top four (CR4) has been slightly decreasing but still is equal to 70 per cent. The value of the Herfindahl index shows a high level of concentration until 2010 (i.e., greater or equal than 0) and a reduction to moderate levels of concentration in 2011.

Table 1: Potato processed products - Market structure statistics 1/

	2006	2007	2008	2009	2010	2011
Number of firms (N)	34	33	37	37	35	29
Market shares						
Mean	0.03	0.03	0.03	0.03	0.03	0.03
Variance	0.01	0.01	0.01	0.01	0.01	0.01
Coefficient of variation	2.95	2.96	3.06	2.95	2.80	2.32
Minimum	0.00	0.00	0.00	0.00	0.00	0.00
Maximum	0.50	0.50	0.49	0.47	0.46	0.42
Concentration ratios						
Top 4 firms (CR4)	0.77	0.78	0.74	0.74	0.74	0.70
Top 8 firms (CR8)	0.89	0.90	0.87	0.87	0.87	0.86
Herfindahl index						
Herfindahl index (H)	0.29	0.29	0.27	0.26	0.25	0.21
Inverse number of firms (1/N)	0.03	0.03	0.03	0.03	0.03	0.03
Asymmetric variance (AV)	0.01	0.01	0.01	0.01	0.01	0.01
Asymmetric component (N×AV)	0.26	0.26	0.25	0.23	0.22	0.18
Standardised Herfindahl index	0.26	0.27	0.25	0.24	0.22	0.19

Source: Own elaboration based on Kantar Worldpanel data for Scotland.
Note: 1/ Statistics computed based on sales values.

The decomposition of the Herfindahl index into inverse number of firms plus the asymmetric component indicates that there is a high degree of dispersion on the value shares, i.e., some firms with high market shares and others with low shares.

Table 2 presents the number of products with positive sales according to several categories: top 4 supermarkets, other supermarkets, discounters, other retailers and major manufacturers. Names have been excluded to preserve the anonymity. As show in the Table those firms with high number of products keep stocks of products between of 18 to 29 products. Note that these are different processed products and the actual number is even greater if one considers attributes such as size and different flavours.

It is clear that manufacturers' brands compete with the retailers' private labels and the appellative of multiproduct firms seems to be a good description of the firms operating in the category.

The purpose of Table 3 is to explore inside the assortment of products by major firms, which are divided by retailer and supermarkets. Four statistics where computed by firm: the Herfindahl index as a measure of concentration; the skewness coefficient as measure of the asymmetry of the distribution of product shares within the firms, where a positive value of the coefficient indicates that the tail on the right side is longer or fatter than the left side (i.e., the are products with high value shares); the minimum share and the maximum share.

Table 2: Potato processed products - Number of products per supplier

Supplier	2006	2007	2008	2009	2010	2011
Top 4 supermarkets						
Firm 1	18	18	17	18	20	19
Firm 2	13	14	13	14	14	17
Firm 3	19	19	19	19	22	24
Firm 4	21	15	15	22	23	21
Other supermarkets						
Firm 1	7	6	5	7	8	10
Firm 2	7	9	8	7	1	0
Firm 3	7	8	6	5	7	3
Firm 4	12	11	11	8	9	9
Discounters						
Firm 1	7	9	10	10	12	11
Firm 2	9	9	10	13	14	14
Firm 3	1	2	3	2	4	1
Other retailers						
Firm 1	5	3	8	9	7	3
Firm 2	17	19	21	20	23	18
Major manufacturers						
Firm 1	27	32	28	29	28	22
Firm 2	18	11	12	10	11	14
Firm 3	6	5	4	3	1	2

Source: Own elaboration based on Kantar Worldpanel data for Scotland.

Table 3 shows that there is a high difference between the minimum and the maximum shares. For some of the cases the maximum reaches values above 50 per cent. Although indicative of great dispersion note that greater values are highly affected by the number of products supplied by the firms. The fact that almost all the computed skewness coefficients are positive, indicate that the right tail of the distribution is long and the firms have products with high shares within their assortment. Although, the value of the Herfindahl indices appear higher for manufacturers than for retailers this is not for all the cases. Nevertheless, the index also indicates concentration amongst relatively few products. This is not strange as potato chips is most important product within the category.

3. The potato processed products

The purpose of this section is to present, for completeness sake, the main results of a model of product proliferation that is available in the industrial organisation literature (Raubitschek, 1988). Despite its relevance to understand the competition by multiproduct firms supplying convenience consumer goods (e.g., grocery products) actually compete, the model has only been marginally used in comparison with other models of product proliferation (e.g., Spence, 1976; Dixit and Stiglitz, 1977; Schmalensee, 1978)[†].

[†] GoogleScholar reports as of April 2014 that the paper has been cited 20 times in contrast with Spence (1976) cited 1,538 times, Dixit and Stiglitz (1977) cited 8,233 and Schmalensee (1978) cited 943 times.

Table 3: Potato processed products – Product statistics by major supplier

Supplier	Statistic	2006	2007	2008	2009	2010	2011
Manufacturer 1	Herfindahl	0.376	0.362	0.314	0.355	0.377	0.474
	Skewness	4.471	4.856	4.460	4.711	4.665	4.145
	Minimum	0.000	0.000	0.000	0.000	0.000	0.000
	Maximum	0.590	0.576	0.534	0.576	0.597	0.674
Manufacturer 2	Herfindahl	0.220	0.231	0.198	0.224	0.228	0.229
	Skewness	2.108	1.295	1.222	1.041	1.541	1.904
	Minimum	0.000	0.000	0.000	0.002	0.004	0.002
	Maximum	0.317	0.319	0.307	0.307	0.372	0.381
Manufacturer 3	Herfindahl	n.c.	n.c.	0.160	0.136	0.129	0.132
	Skewness	n.c.	n.c.	-0.180	1.555	1.090	1.911
	Minimum	n.c.	n.c.	0.017	0.007	0.000	0.000
	Maximum	n.c.	n.c.	0.220	0.237	0.218	0.261
Manufacturer 4	Herfindahl	0.382	0.593	0.693	0.991	1.000	0.754
	Skewness	1.323	1.391	1.057	0.707	n.c.	0.000
	Minimum	0.000	0.000	0.000	0.000	0.000	0.000
	Maximum	0.560	0.752	0.818	0.996	1.000	0.856
Supermarket 1	Herfindahl	0.134	0.111	0.102	0.107	0.096	0.117
	Variance	0.004	0.003	0.002	0.003	0.002	0.003
	Skewness	1.747	0.578	0.691	1.536	1.722	1.796
	Minimum	0.000	0.000	0.000	0.000	0.000	0.003
	Maximum	0.227	0.162	0.173	0.190	0.177	0.204
Supermarket 2	Herfindahl	0.113	0.132	0.109	0.124	0.116	0.122
	Skewness	1.783	2.262	1.356	1.569	1.663	1.891
	Minimum	0.003	0.000	0.001	0.000	0.000	0.004
	Maximum	0.238	0.283	0.217	0.234	0.219	0.247
Supermarket 3	Herfindahl	0.078	0.080	0.077	0.083	0.081	0.090
	Skewness	0.949	0.460	0.700	1.127	1.353	1.872
	Minimum	0.000	0.000	0.001	0.009	0.002	0.002
	Maximum	0.151	0.129	0.129	0.158	0.153	0.190
Supermarket 4	Herfindahl	0.264	0.205	0.225	0.226	0.263	0.269
	Skewness	1.233	0.483	1.479	2.081	2.326	2.026
	Minimum	0.017	0.003	0.002	0.013	0.008	0.005
	Maximum	0.429	0.301	0.384	0.415	0.457	0.449

Source: Own elaboration based on Kantar Worldpanel data for Scotland.

Raubitschek's model reflects three stylised facts that are important in the markets of convenience goods, where food is part of, one is that firms compete introducing new products into the market and "hoping" that by doing so they will be hitting jackpots, i.e., the new products introduced into the market become successful because they are uptaken by consumers, and remain on retailers' shelves for a long time. Note that in the literature of product management, this product category are called "cash cows" see (Armstrong and Cunningham, 2002). However, note that the aim of Raubitschek's model is not to capture all the dynamics of product management and cycle. Second, the most important competing firms (i.e., those that have a large market share) are multiproduct firms, offering several products within a category. Note that multiple retailers can be included within this group of multiproduct firms as far as they offer their own private label products. The third aspect in the model is that the firms' decisions are made under uncertainty, i.e., only a percentage of the products are actually successful.

Decision making in Raubitschek's model is characterised as a two-stage process. In the first stage, the firm makes a centralised decision about the number of products to introduce. In the second stage, successful products are managed in a decentralised manner through independent brand managers. The first stage equilibrium is a Nash equilibrium in the number of product introductions, whilst the second stage equilibrium is the standard monopolistic competition equilibrium quantities sold.

According to Raubitschek, "these equilibria attempt to capture two stylised facts: that frequently a small number of fiercely competing firms dominate convenience consumer goods industries, and that each firm must manage a relatively large number of successful brands in a market containing many successful products. This is consistent with the fact that a firm relies on a relatively small percentage of brands for its sales and profits since the total number of brands is typically large". (p. 472)

The model is solved backwards, i.e., first, the second stage is calculated, where the equilibrium in quantities is calculated taking the number of brands in each firm as given. The solution of the second stage is then introduced in the first stage and the Nash equilibrium is computed, finding the expected number of brands that are introduced and the product proliferation.

Let t be the number of firms and be greater than 1; n_i ($n_i \geq 1$) be the number of products that firm i has within a product category. The total number of products within a category is equal to $n = \sum_{i=1}^{t} n_i$.

The demand side of the model follows the product proliferation literature (e.g., Dixit and Stiglitz, 1977) where it is portrayed by an aggregate representative household. The consumers' demand comes from the solution of a standard consumer utility maximisation problem where preferences are expressed by a Constant Elasticity of Substitution (CES) utility function (income effects are assumed to be negligible). The maximisation problem is given by (1):

$$\underset{x_j}{\text{Max}} \quad \frac{\left[\sum_{j=1}^{n} a_j x_j^{\alpha_j}\right]^{1-\gamma}}{1-\gamma} - \sum_{j=1}^{n} p_j x_j \tag{1}$$

The results of (1) expressed in an inverse demand for are given by (2):

$$p_j = \left[\sum_{j=1}^{n} a_j x_j^{\alpha_j}\right]^{-\gamma} a_j \alpha_j x_j^{\alpha_j - 1} \tag{2}$$

In the second stage of the model, the product manager within a firm, having operating costs $c = c_0 x_j^{\beta}$ solve a profit maximisation problem to find the quantity x to be supplied (the sub-index j is dropped due to the fact that the equilibrium to be computed is a symmetric equilibrium). The profit maximisation problem is given by (3).

$$\underset{x}{\text{Max}} \quad \pi_s = \left[n \cdot a x^{\alpha}\right]^{-\gamma} a \alpha x^{\alpha-1} \cdot x - c_0 x^{\beta} \tag{3}$$

The equilibrium quantities and profits (under the assumption of a monopolistic competition setting) are giving by (4) and (5) (the supra-index e indicates equilibrium values):

$$x^e = h_1 n^{-\frac{\phi}{\beta}} \quad \text{and} \quad p^e = h_2 n^{\frac{\phi(\beta-1)}{\beta}} \tag{4}$$

Where

$$h_1 = a^{1/\alpha} h_3^{(\theta-1)/((\theta-1+\gamma)\alpha)} > 0$$
$$h_2 = \alpha a^{1/\alpha} h_3^{((\theta-1)(1-\gamma)\alpha-1)/((\theta-1+\gamma)\alpha)} > 0$$
$$h_3 = \left(\left(a^{\theta}\alpha\right)/(c_0\theta)\right)^{1/(\theta-1)} > 0$$
$$\phi = \gamma\theta/(\theta-1+\gamma) \qquad 0 < \phi < 1$$

The equilibrium profits from the second stage are given by (5):

$$\pi_s^e = h n^{-\phi} \tag{5}$$

Using results from (5) the firm decides the number of products to introduce into the market (Ω_i). The binomial distribution is used to describe the probability for success of new products by each firm. The random variable k_i indicates the number of jackpots that the firm will obtain when it introduces Ω_i (thus the expected number of jackpots is given by $E(k_i) = \rho\Omega_i$, where ρ is the probability of success). Note that there is an introduction cost per product for each firm of F. Based on this setting the firm's problem is given by (6):

$$\underset{\Omega_i}{\text{Max}} \qquad E(\pi_f) = E\left\{h(n_i + k_i)(n+k)^{-\phi} - F\Omega_i\right\} \tag{6}$$

From the solution of (6), the equilibrium occurs when $\Omega_i = 0$ for all the firms, i.e., no incentives to introduce more products. For the case when the number of firms in the market is greater or equal than 2 and a symmetric equilibrium is considered, the number of expected products in equilibrium and the number of products per firm are given by (7) and (8).

$$\left(n^e\right)^{\phi} = \frac{\rho h}{F}\left\{1 - \frac{\phi}{t} - \frac{\phi}{n^e}(1-\rho)\right\} \tag{7}$$

$$n_i^e = \frac{n^e}{t} \tag{8}$$

4. Discussion

Table 4 presents the importance of products with healthier attributes within the assortment of manufacturers (brands) and retailers (private labels). Products with healthier attributes are those that are advertised as fat free or with lower fat that the standard products. Examples of these healthier products are the oven chips which are either fat free or very limited quantities of oil (e.g., less than 3 per cent).

Two striking results from Table 4 are: first, share of products with healthier attributes is relatively low. The share of the healthier products does not reach the 20 per cent and it is skewed towards much lower values. The second result is that despite the health campaigns, there is no clear trend towards greater share for healthier products.

To what extent the results from Table 4 are consistent with the type of competition reflected in Raubitschek's model? The answer is that the model can accommodate the results presented in Table 4. This is

because as far consumers favour not only healthier food but also its standard versions, the firms will have incentives to maintain an assortment of products that includes both varieties of food products.

A result that it is interesting from Raubitschek's model is that as the probability of hitting a jackpot increases, the number of products introduced by each firm and the total number of products introduced by all the firms will increase. This result is important because the probability of hitting the jackpot can be associated with factors both related to the competition (number of products on a category) but also with consumers' interest on new products (e.g., healthier products) that provides an incentives for introducing more products. In this sense, advertising towards healthier nutritional regimes (e.g., health campaigns) have effect of encouraging the introduction of new products with that profile. This is reflected on the document "Delivering Healthy Growth" by the UK Food and Drink Federation (FDF, 2013), where it is stated that over "8,500 products are launched each year ranging from light options, to fortified foods, to new product sizes, in order to meet specific consumer or nutritional needs. From providing healthy convenience food for busy people, to offering safe choices for people with food allergies and intolerances, manufacturers provide access to a broad range of foods that can contribute to a balanced diet" (op. cit, p. 7).

Table 4: Potato processed products – Standard and healthier products shares for major suppliers

Supplier	Category	2006	2007	2008	2009	2010	2011
Manufacturer 1	Standard	84.1	84.1	82.8	84.2	83.5	81.8
	Healthier	15.9	15.9	17.2	15.8	16.5	18.2
Manufacturer 2	Standard	94.3	97.2	94.1	94.7	95.3	96.3
	Healthier	5.7	2.8	5.9	5.3	4.7	3.7
Manufacturer 3	Standard	n.c.	n.c.	100.0	100.0	100.0	100.0
	Healthier	n.c.	n.c.	0.0	0.0	0.0	0.0
Manufacturer 4	Standard	100.0	100.0	100.0	100.0	100.0	100.0
	Healthier	0.0	0.0	0.0	0.0	0.0	0.0
Supermarket 1	Standard	91.5	89.4	91.3	98.0	98.2	98.2
	Healthier	8.5	10.6	8.7	2.0	1.8	1.8
Supermarket 2	Standard	87.2	90.5	94.0	96.2	97.7	97.0
	Healthier	12.8	9.5	6.0	3.8	2.3	3.0
Supermarket 3	Standard	100.0	100.0	100.0	100.0	98.8	98.4
	Healthier	0.0	0.0	0.0	0.0	1.2	1.6
Supermarket 4	Standard	100.0	98.3	100.0	100.0	100.0	100.0
	Healthier	0.0	1.7	0.0	0.0	0.0	0.0

Source: Own elaboration based on Kantar Worldpanel data for Scotland.

One could expect that the introduction of new products (e.g., healthier) would bring cannibalisation of profits from other products maintained by the firms. This could eventually force the firms to remove those products from their assortment. However, as shown by Raubitschek, although the profits of the other firms' products are reduced, as the probability of hitting a jackpot increases: (i) the expected number of products per firm and the total expected number of products in the market in the symmetric equilibrium increases; (ii) the expected operating profits of each firm in the symmetric equilibrium increase. In other term, as the current products are still producing profits for the firms, these do not have any incentive to stop offering them.

Note that the logic of the competition represented by model helps to explain why manufacturers would not support a policy such as choice-editing. There is no incentive for a firm to reduce its assortment to make it healthier and stop supplying some of its jackpot products. In this sense it is coherent with the model the fact that the UK Food and Drink Federation (FDF, 2013) sees its contribution to solve the health problem through reformulation of products, introduction of new products, providing information, introducing new technologies and providing advice to their staff. None of these include choice editing.

5. Conclusions

The purpose of this paper has been to study the implications of firms' behaviour as regards the introduction of new products (i.e., "hitting the jackpot" competition) in the context of the health agenda followed by many countries, which aims at improving the nutritional quality of the available food products. To put context to the discussion, the case of the processed potato products category was considered.

Raubitshek's model, despite its simplifications, helps to understand the operation of multiproduct firms selling differentiated products in highly concentrated convenience consumer goods industries often focus their rivalry on new product introductions even though the introduction of a new product is expensive and the failure rate is high.

The analysis indicates that one should not expect the industry's assortment of products to change much (i.e., towards a greater provision of healthy products) by itself unless the consumers' demand for healthy products, in comparison to that for standard/unhealthy products, increases. In fact, the market share of healthy products remains low, and as shown by the data, do not fluctuate much. Furthermore, given the way that firms compete they do not have incentives to follow any type of choice editing.

Under the described setting the two best policies to follow to improve the quality of the assortment of food products are: to continue the information campaign aiming to improve consumers' interest on healthier products, and through this to increase their demand for healthier products (i.e., affecting the probability of hitting the jackpot). The second policy derives from the fact that if firms are not going to improve their product assortment, then product reformulation (e.g., reducing saturated fats, sugar and salt) is an effective device to improve the nutritional character of the existing product stock.

References

Armstrong, G., Cunningham, M. H., 2002. Principles of marketing. Scarborough, Ont.: Prentice Hall.

Dixit, A. K., Stiglitz, J. E. 1977. Monopolistic competition and optimum product diversity. The American Economic Review, 67, p.297.

Food and Drink Federation (FDF), 2013). Delivering Healthy Growth. January. Available online: http://www.fdf.org.uk/corporate_pubs/DHG.pdf

Food Ethics Council, 2014. Consumer choice. Available online at: http://www.food ethicscouncil.org/topic/Consumer+choice

Foster, R., Lunn, J., 2007. 40th Anniversary Briefing Paper: Food availability and our changing diet. Nutrition Bulletin, 32, p. 187.

Francis, M., Dorrington, P., Hines, P., 2008. Supplier led new product development process improvement in the UK fast moving consumer goods industry. International Journal of Innovation Management, 12, p. 195.

Hickman, L., 2007. Does the consumer really know best? The Guardian, 25 October.

Lang, T., Barling, D., Caraher, M., 2001. Food, Social Policy and the Environment: Towards a New Model. Social Policy and Administration, 35, p.1.

Mintel, 2014. Keynote Report – Frozen products. Available online at: https://www.keynote.co.uk/market-intelligence/view/product/10939/frozen-foods/chapter/4/market-size

Raubitschek, R. S., 1988. Hitting the jackpot: product proliferation by multiproduct firms under uncertainty. International journal of industrial organization, 6, p. 469.

Schmalensee, R. (1978). Entry deterrence in the ready-to-eat breakfast cereal industry. The Bell Journal of Economics, 305-327.

Spence, M. (1976). Product selection, fixed costs, and monopolistic competition. The Review of Economic Studies, 217-235.

UK Government Office for Science Foresight (UK GOSF), 2007. Tackling Obesities http://www.foresight.gov.uk/Drumbeat/OurWork/ActiveProjects/Obesity/Obesity.asp